Abstract of the Disclosure

A novel method for forming electrodes in the fabrication of an MIM (metal-insulator-metal) capacitor, is disclosed. The method improves MIM capacitor performance by preventing plasma-induced damage to a dielectric layer during deposition of a top electrode on the dielectric layer, as well as by reducing or preventing the formation of an interfacial layer between the dielectric layer and the electrode or electrodes, in fabrication of the MIM capacitor. The method typically includes the patterning of crown-type capacitor openings in a substrate; depositing a bottom electrode in each of the crown openings; subjecting the bottom electrode to a rapid thermal processing (RTP) or furnace anneal step; depositing a dielectric layer on the annealed bottom electrode; depositing a top electrode on the dielectric layer using a plasma-free CVD (chemical vapor deposition) or ALD (atomic layer deposition) process; and patterning the top electrode of each MIM capacitor.